

# Laboratory Biosafety and Biosecurity

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# WHO Biosafety programme

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## WHO Biosafety:

"Laboratory biosafety" describes containment principles, technologies and practices implemented to prevent unintentional exposure to pathogens and toxins, or their accidental release.



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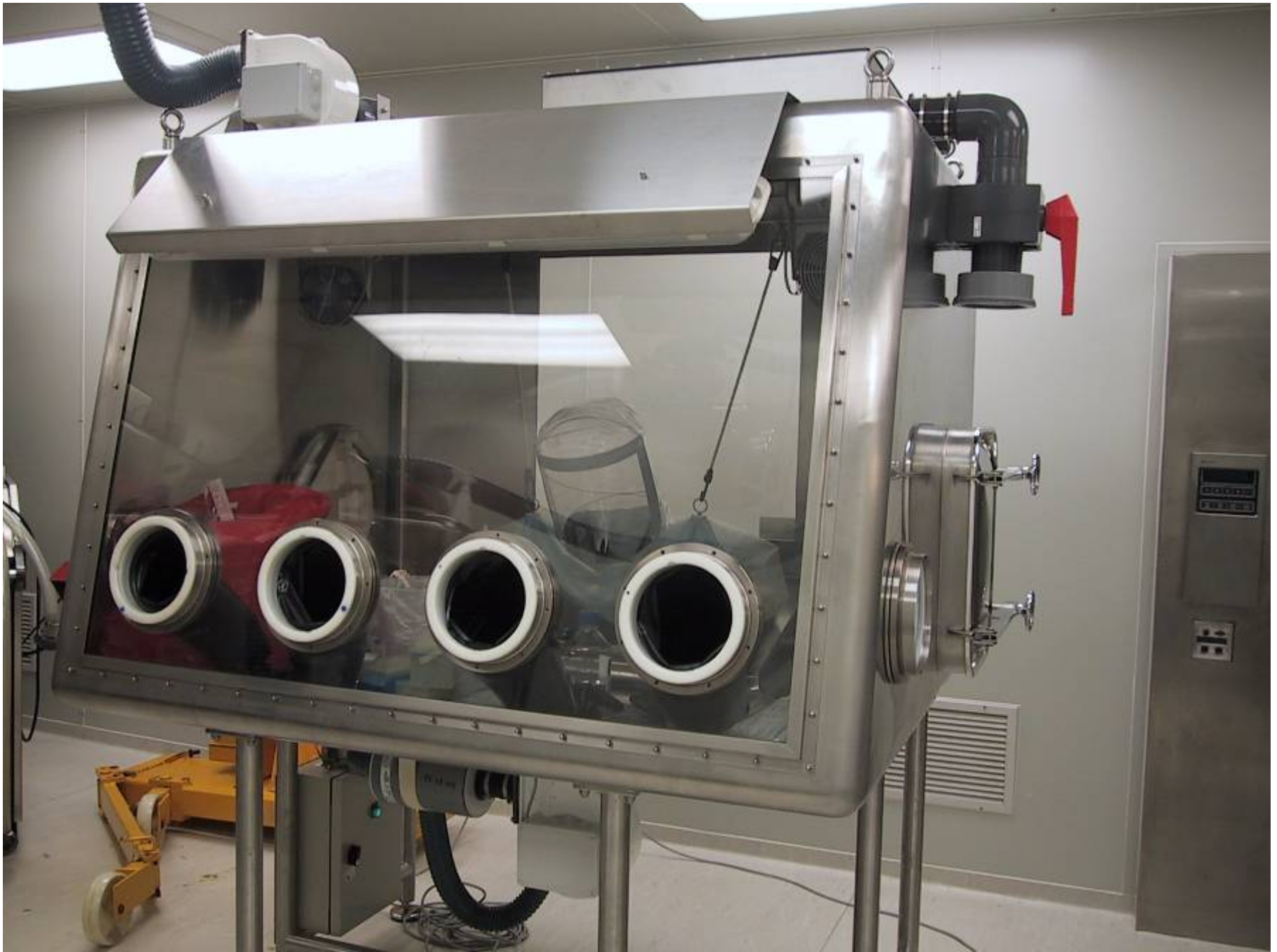




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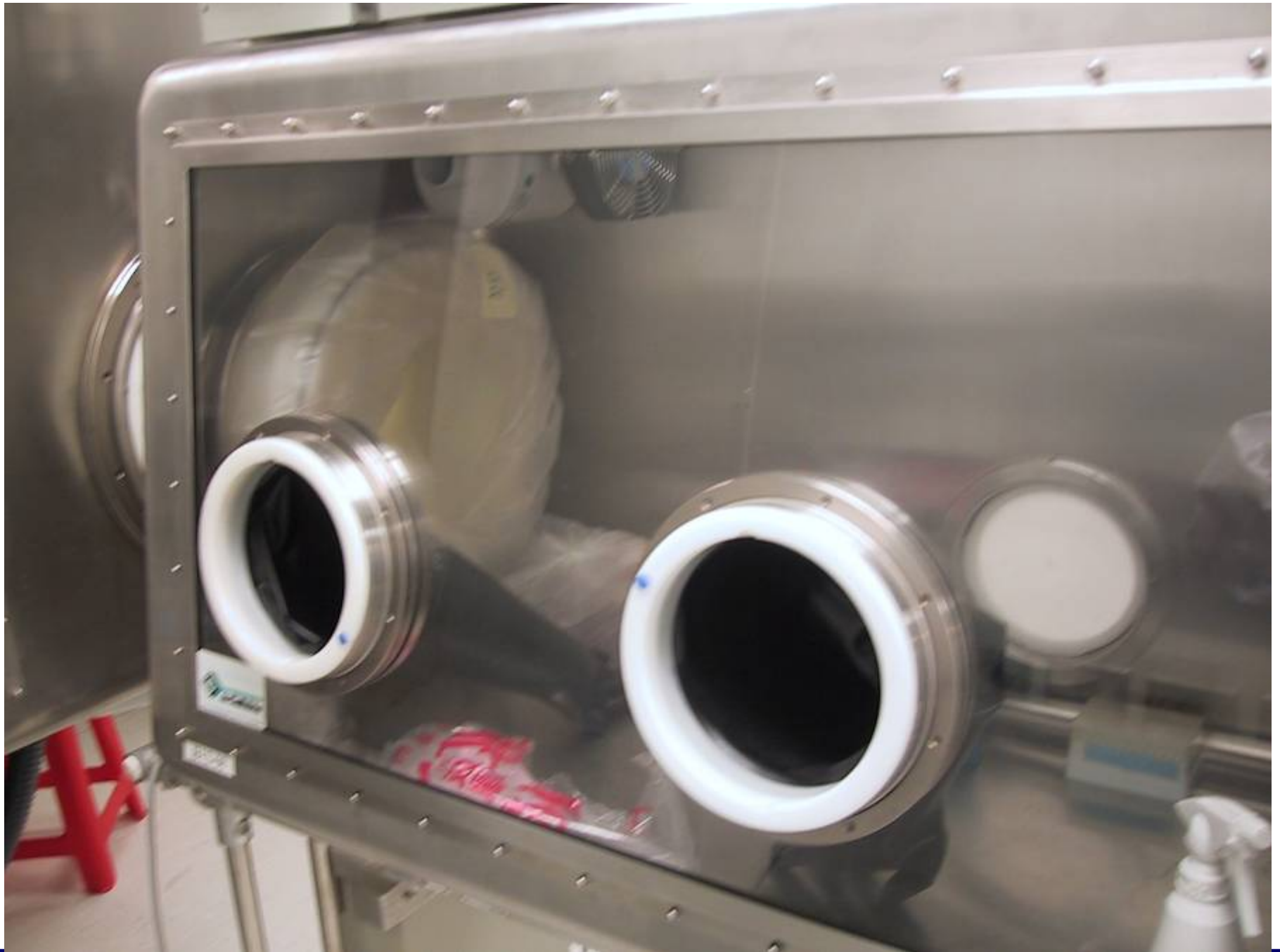




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# WHO Biosafety: Objectives

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## Biosafety:

To promote the use of safe practices in the handling of pathogenic microorganisms

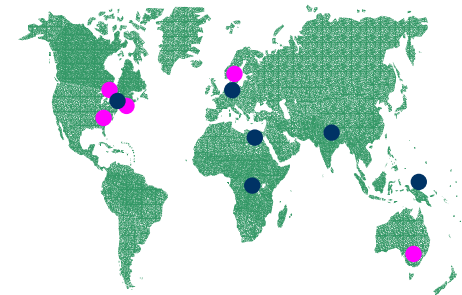
- in the laboratory
- during transportation
- in field investigations
- in manufacturing facilities
- in health-care facilities



# WHO Biosafety: Function

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- “new” Biosafety Advisory Group
  - 5 Collaborating Centres •



- need to expand further:
- focal points at WHO Regional Offices •
  - new Collaborating Centres
  - ABSA, EBSA (JBSA, ANBio, APBA,...)





# WHO Laboratory Biosafety Manual

## Biosafety:

To promote the use of safe practices in the handling of pathogenic microorganisms

- in the laboratory
- during transportation
- in field investigations
- in manufacturing facilities
- in health-care facilities

- **Laboratory Biosafety Manual, 3rd edition**
  - lab commissioning and certification
  - lab biosecurity concepts



- translated into F, S, P, Ch, Ru
- available on web, CD-Rom, hard copies



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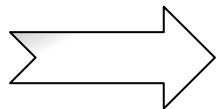




# Development of national policy

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- Identify the need to develop national biosafety policies
- Identify appropriate guidance to develop national biosafety policies
  - follow own needs and risk/threat assessment
- Identify need to incorporate biosafety policies into daily activities: development of a "biosafety culture"
- Develop a curriculum for biosafety professionals



Top down and bottom up approach

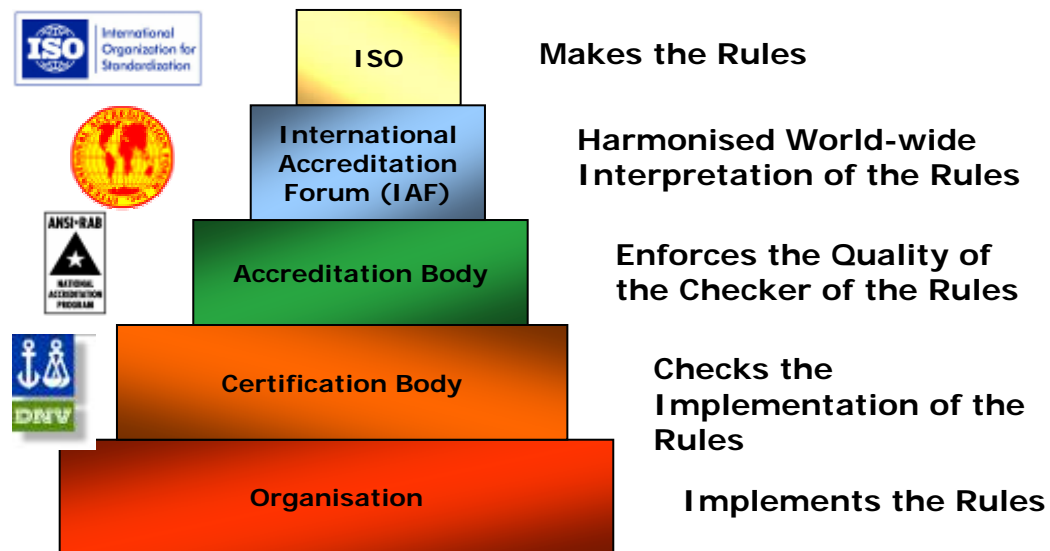




# Laboratory Certification I

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## Players in an ISO Management System

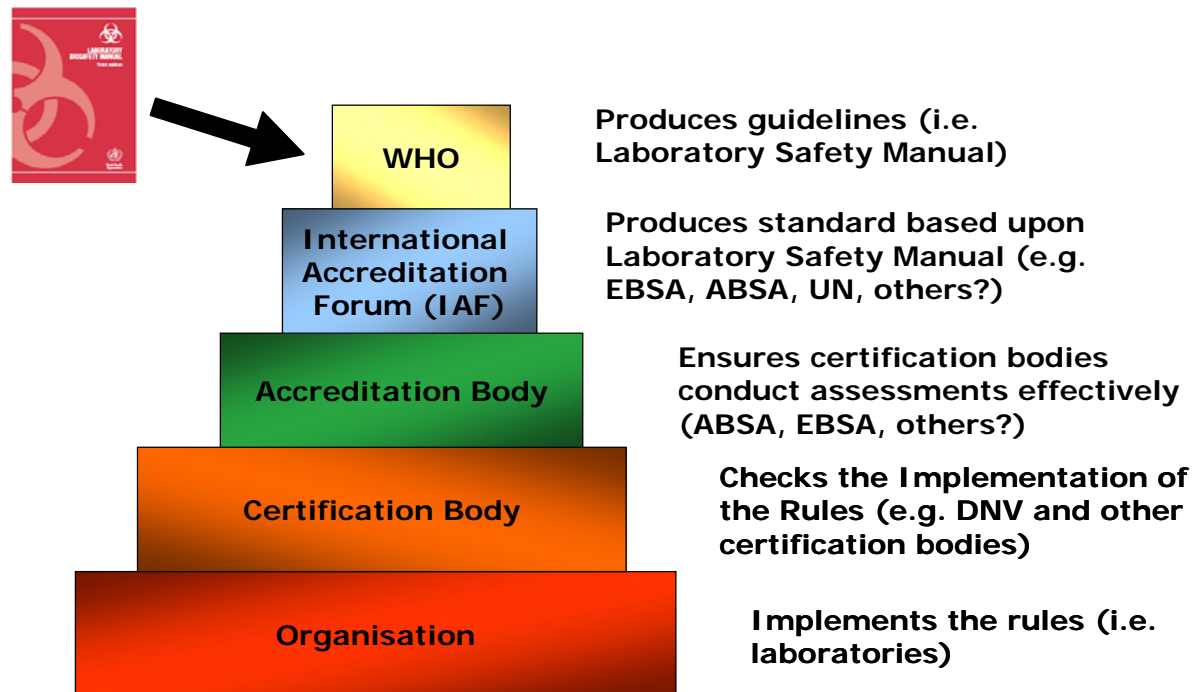






# Laboratory Certification II

## Potential Players in a Laboratory Biosafety & Biosecurity Certification System





# Laboratory biosecurity

## Biosafety:

To promote the use of safe practices in the handling of pathogenic microorganisms

- in the laboratory
- during transportation
- in field investigations
- in manufacturing facilities
- in health-care facilities

## • Laboratory biosecurity guidance



## “Laboratory biosecurity”

refers to institutional and personal security measures designed to prevent the loss, theft, misuse, diversion or intentional release of valuable biological materials (pathogens and toxins)





# Transport of infectious substances

## Biosafety:

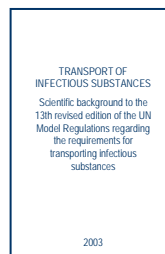
To promote the use of safe practices in the handling of pathogenic microorganisms

- in the laboratory
- **during transportation**
- in field investigations
- in manufacturing facilities
- in health-care facilities



## • Transport of Infectious Substances

UNCETDG —————> ICAO —————> IATA



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# SARS outbreak and lab-acquired infections

## Biosafety:

To promote the use of safe practices in the handling of pathogenic microorganisms

- in the laboratory
- during transportation
- **in field investigations**
- in manufacturing facilities
- in health-care facilities

- **SARS biosafety guidelines on WHO web site**

2003



2004

- **Taipei and Beijing biosafety visits and recommendations**



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# Polio eradication

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## Biosafety:

To promote the use of safe practices in the handling of pathogenic microorganisms

- in the laboratory
- during transportation
- in field investigations
- in manufacturing facilities
- in health-care facilities

- guidelines for containment of polioviruses in post-eradication era

- wildtype strains
- Sabin strains
- laboratories
- vaccine production facilities



- guidelines for large scale production of pandemic flu vaccines



# Smallpox – variola virus

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## Biosafety:

To promote the use of safe practices in the handling of pathogenic microorganisms

- in the laboratory
- during transportation
- in field investigations
- in manufacturing facilities
- in health-care facilities

- biosafety visits of BSL4 repositories
  - CDC, Atlanta, GA, USA,
  - VECTOR, Novosibirsk Region, Russia





# Technical assistance: Training

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## Biosafety:

To promote the use of safe practices in the handling of pathogenic microorganisms

- in the laboratory
- during transportation
- in field investigations
- in manufacturing facilities
- in health-care facilities

- Training:
  - transport of infectious substances
  - biosafety / lab biosecurity

for: - Regional / national biosafety courses

- Training guidelines



“TTM”



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# A biosafe and biosecure future?

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1. Develop guidelines and model regulations:
  - LBM3, transport, laboratory biosecurity
2. Identify needs for norms and standards:
  - transfer, commissioning and certification of labs, threat and risk assessments, codes of conduct
3. Wishful thinking vs. reality:
  - How far are we from the ideal biosafety world?
  - How do we get there?
  - Who will help and contribute?
  - How can we support countries in implementing a biosafety/laboratory biosecurity culture?



# Strengthening Biological Risk Management

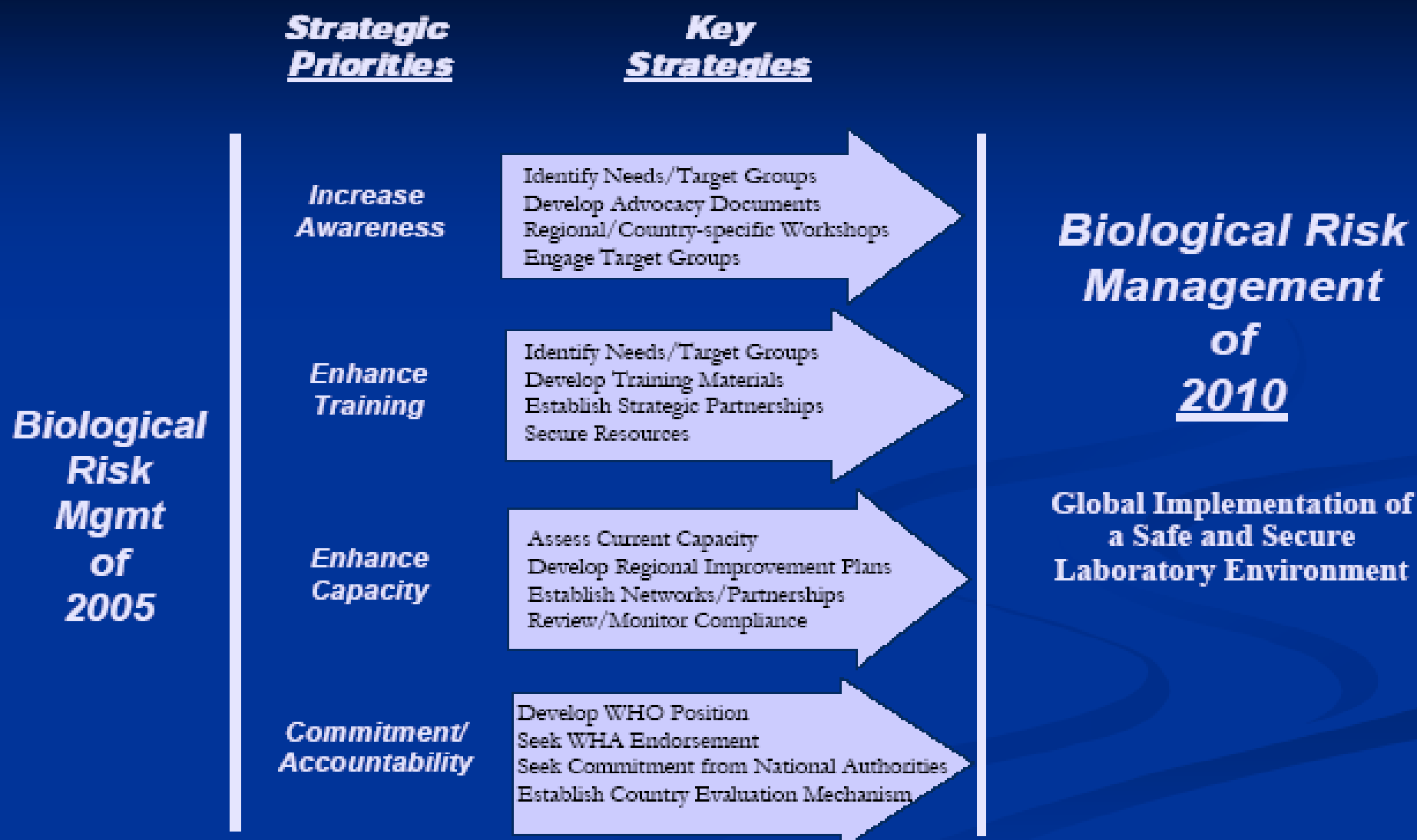


## *Vision for Integrated BioRisk Management:*

- ✓ Increased focus on "awareness" to change current culture
- ✓ Clarify terminology
- ✓ Development of targeted "training strategies"
- ✓ Securing "commitment" from key stakeholders, including government officials, who must be on board
- ✓ Continue increasing "capacity" based on Regional/Country needs and establish accountability through development of Country "report cards"



# **Biological Risk Management Strategy**



# Thank you

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